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Chiu

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(54) **EXERCISE APPARATUS**

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A63B 26/00 (2006.01)

(52) **U.S. Cl.**
USPC **482/130**; 482/129; 482/142

(58) **Field of Classification Search**
USPC 482/51, 79–80, 92–96, 140–142, 482/121–123, 129–130
See application file for complete search history.

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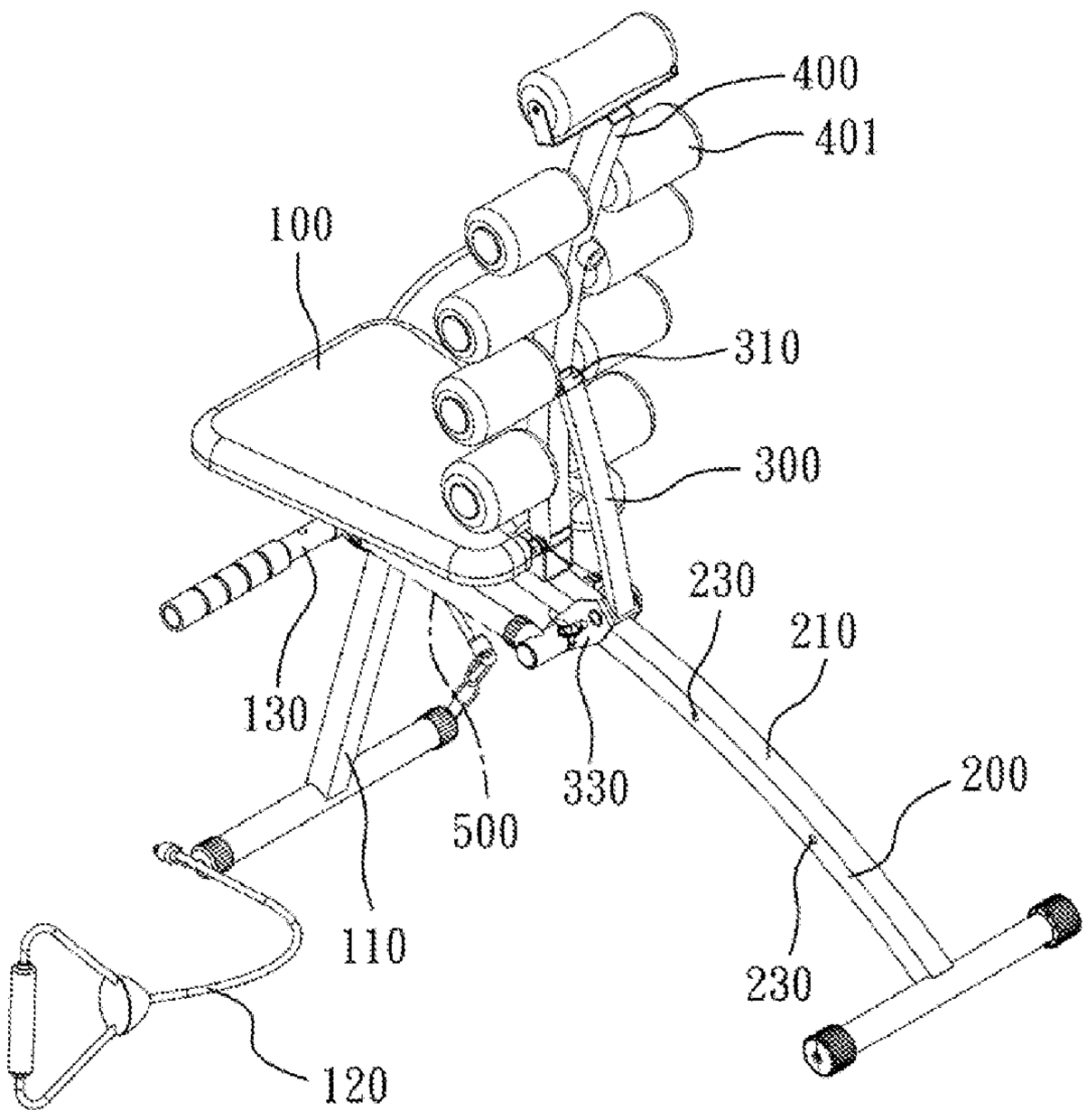
(57) **ABSTRACT**

An exercise apparatus is provided and includes a seat, a curved track, a linker, a backrest, and a replacing force means. The curved track is connected to the seat. A first end of the linker is slidably mounted on the curved track. An end of the backrest is pivotally connected to the seat, and a second end of the linker opposite the first end is pivotally connected to the backrest. An elastic member is used for providing a returning force to return the backrest to a first position.

11 Claims, 6 Drawing Sheets



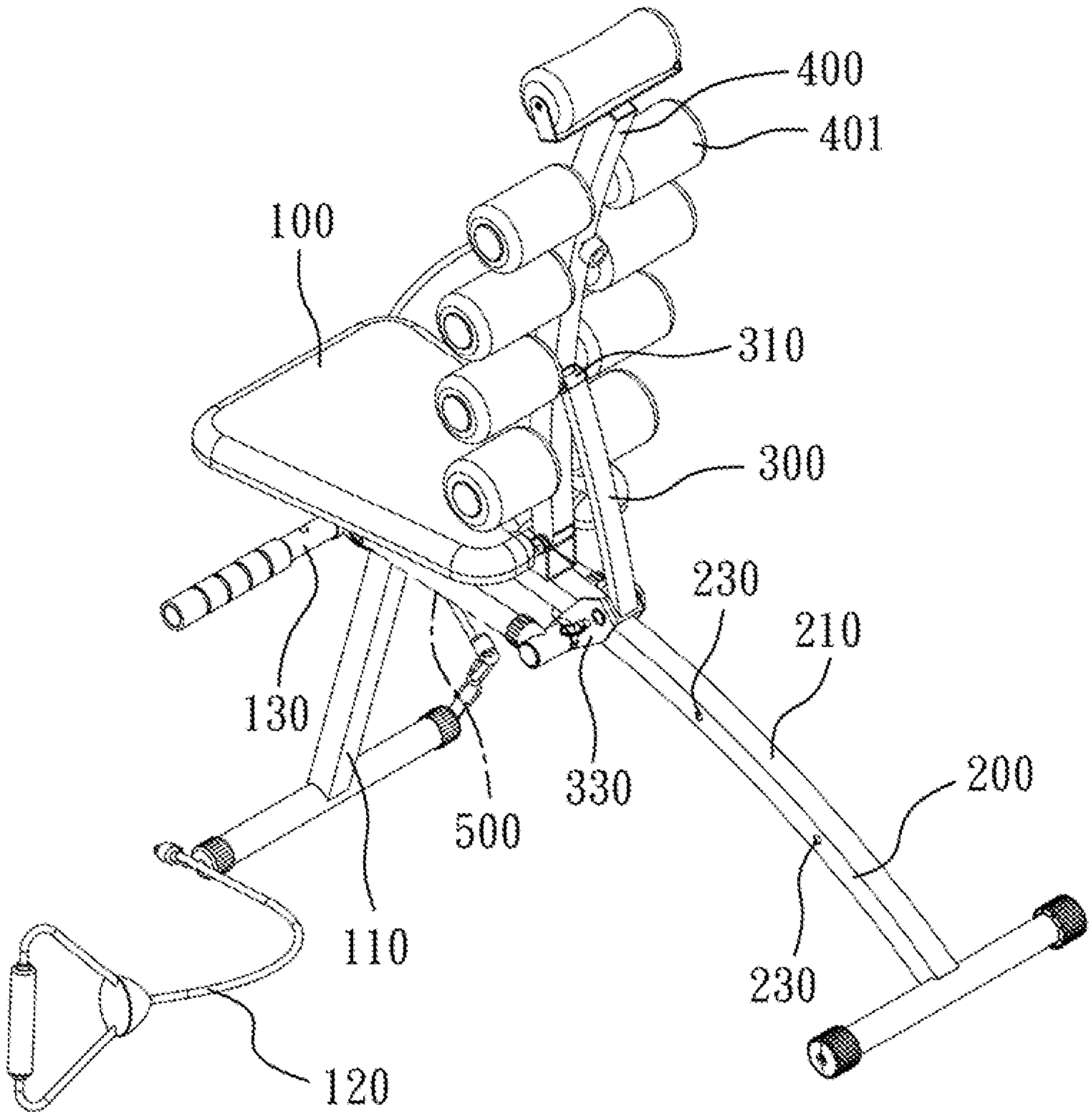


Fig. 1

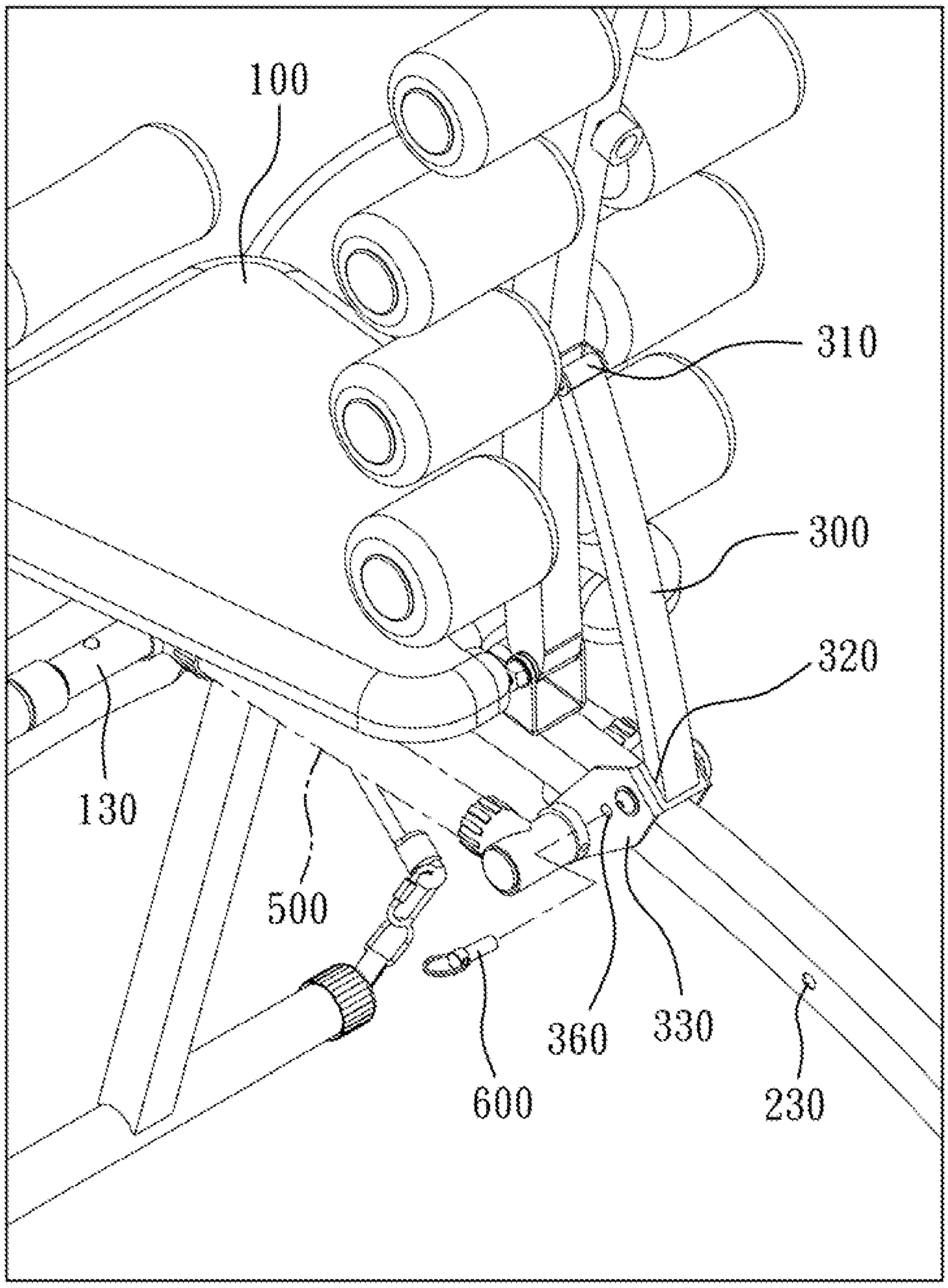


Fig. 2

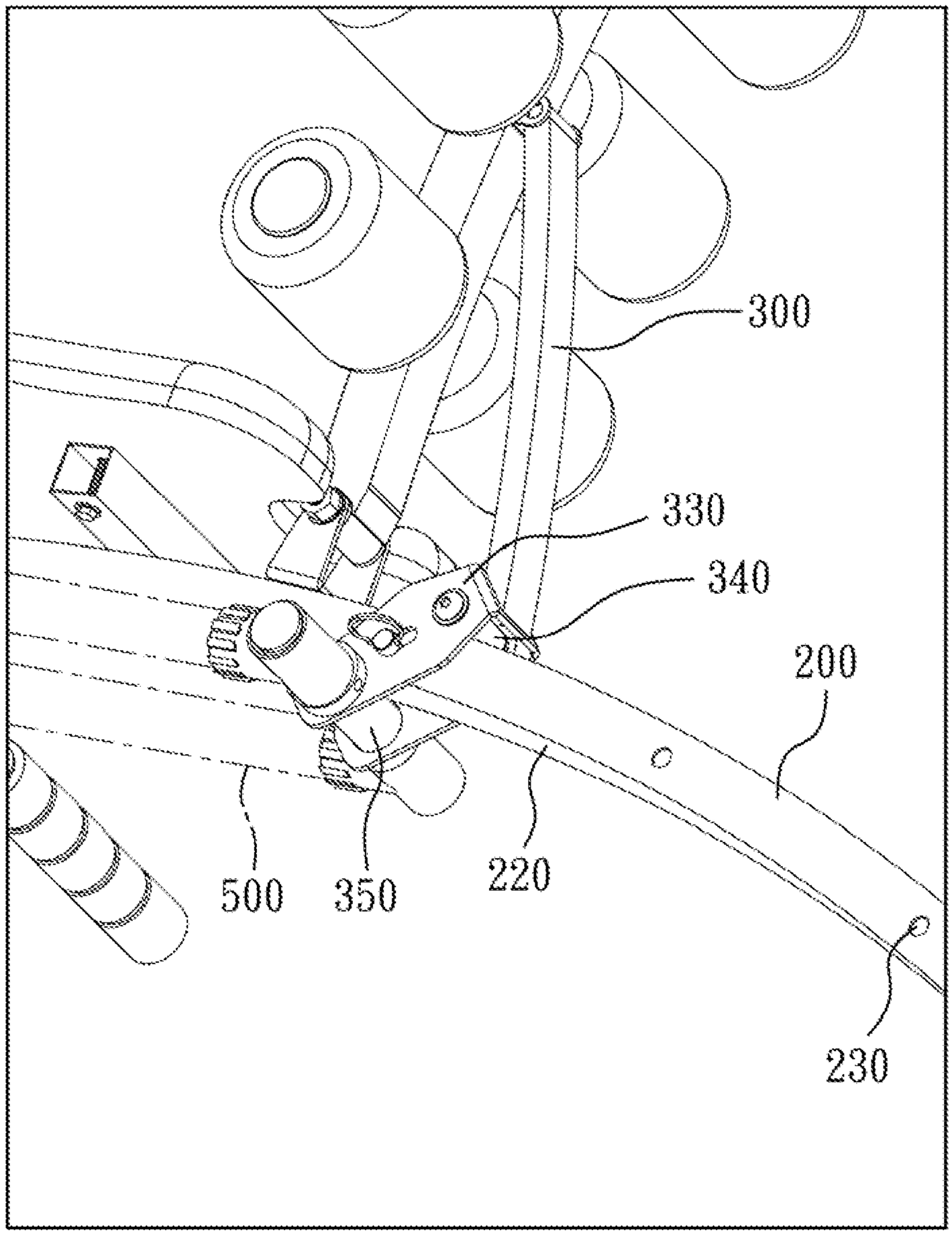


Fig. 3

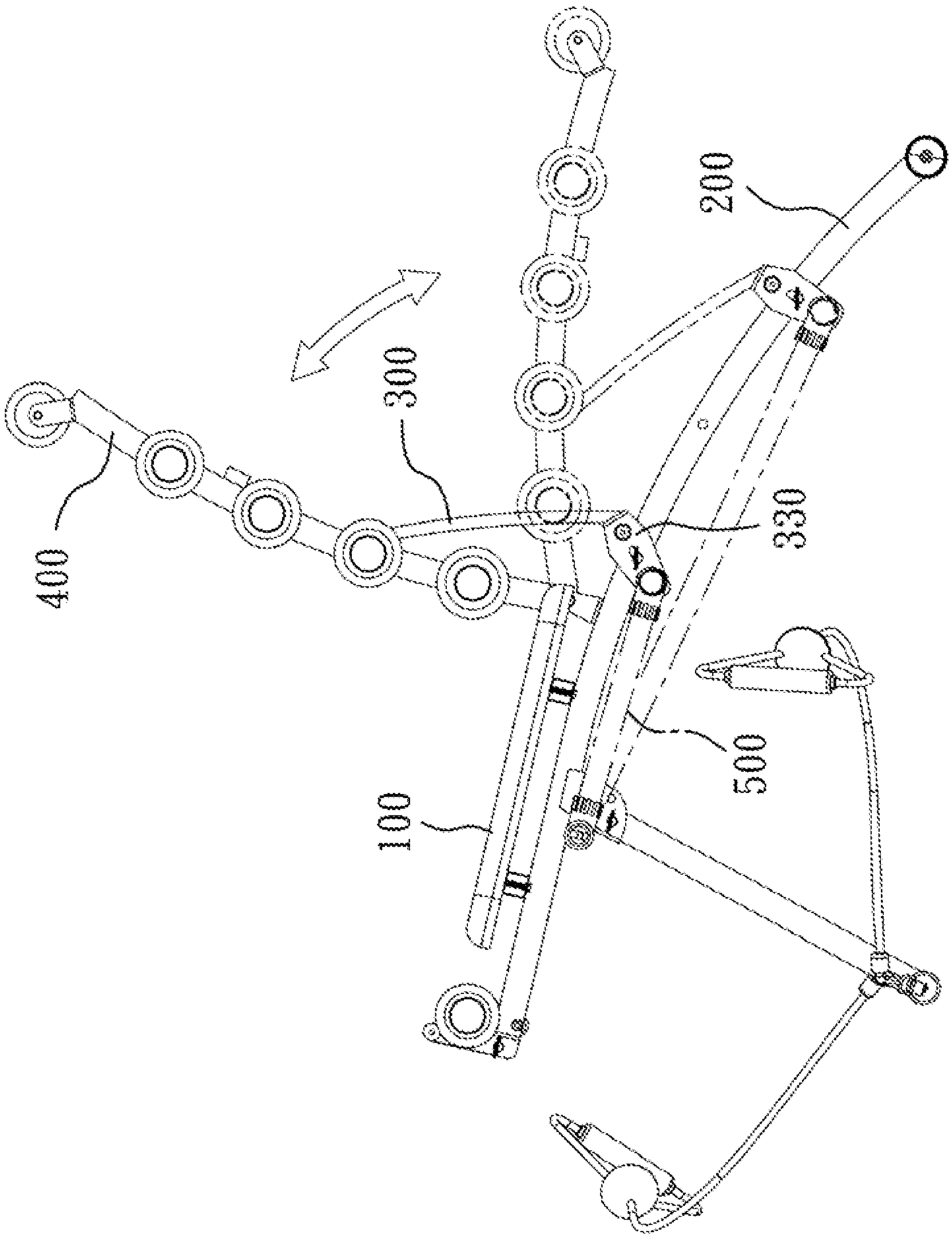


Fig. 4

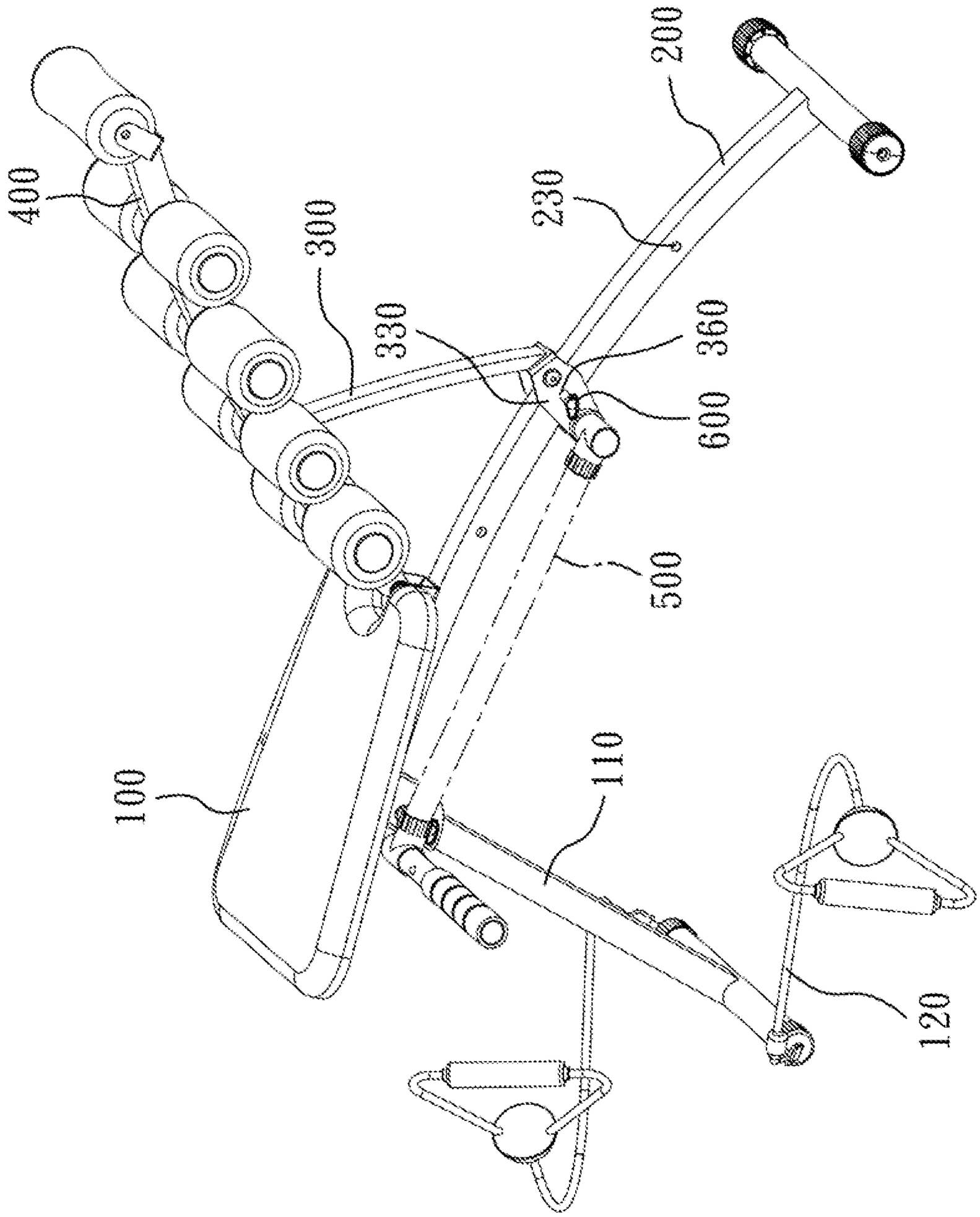


Fig.5

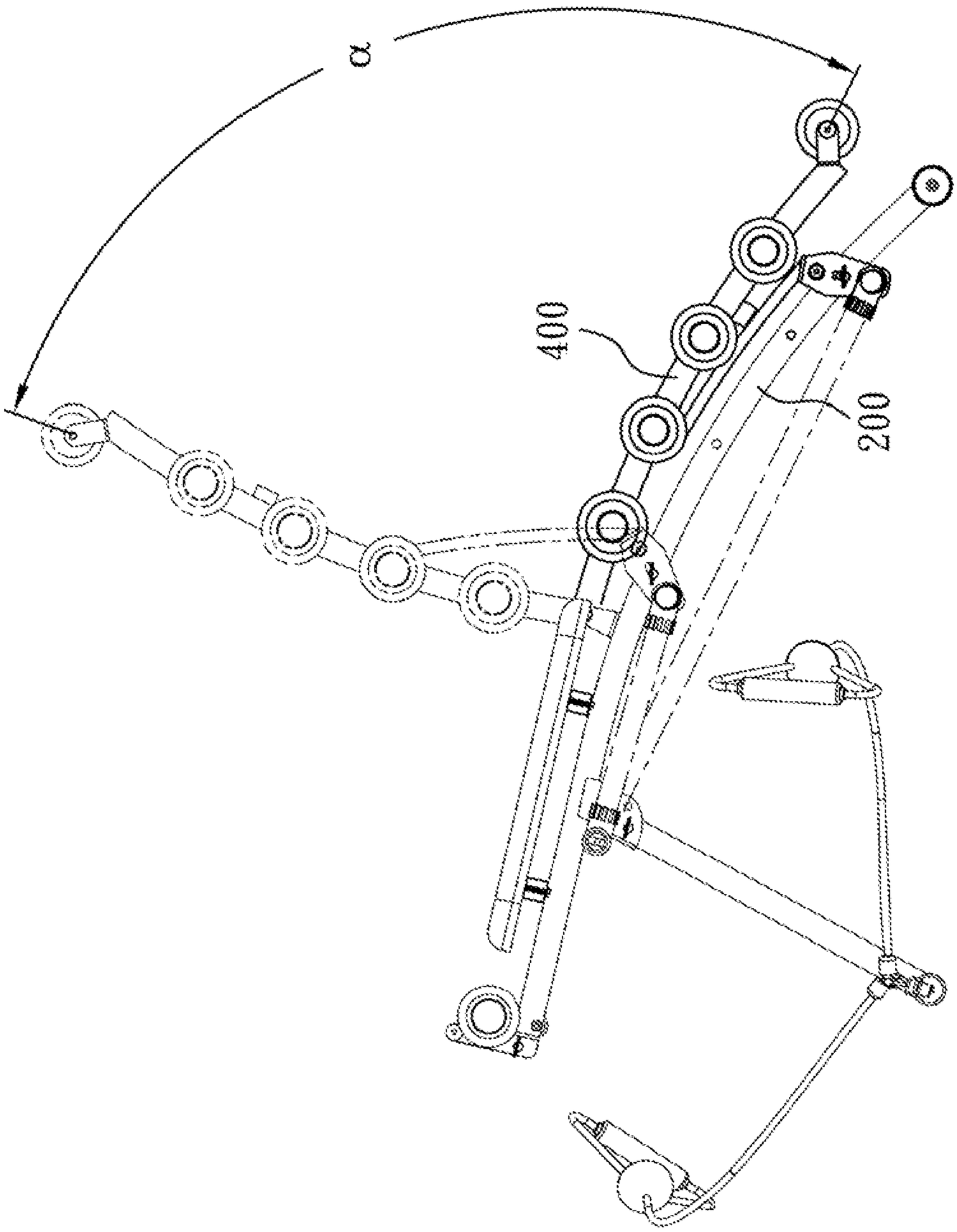


Fig. 6

EXERCISE APPARATUS

RELATED APPLICATIONS

The application claims priority to Taiwan Application Serial Number 101211885, filed Jun. 20, 2012, which is herein incorporated by reference.

BACKGROUND

1. Field of Invention

This invention relates to an exercise apparatus. More particularly, this invention relates to a sit-up exercise apparatus.

2. Description of Related Art

There have been strong sales of exercise equipment in recent years, especially exercise equipment related to performing sit-up exercises. Most conventional exercise equipment of this type includes a seat, a seatback, a sliding wheel, and a spring. The seat is pivotally connected to the seatback. The sliding wheel is located at the backside of the seatback, is abutted against the ground, and undergoes rotation in this state contacting the ground. The spring is connected between the seat and the seatback. The spring provides a replacing force for replacing the seatback back to its original position.

During operation, the aforementioned sliding wheel of the exercise equipment undergoes rotation on the ground, as described above, and may also experience some sliding on the ground. As a result of such sliding, the path of pivotal displacement of the seatback relative to the seat will not be consistently located on a single vertical plane. Therefore, there is structural instability with such a configuration, ultimately resulting in a potentially dangerous situation. In addition, the aforementioned replacing force as well as the exercise resistance force is provided by the spring connected between the seat and the seatback. One consequence of this is that the exercise resistance will be monotonous and unchanging, minimizing the effect of training the muscles.

Moreover, because the sliding wheel is abutted against the ground, as described above, the maximum reclining angle of the seatback will be limited (i.e, angles larger than 80 degrees are typically not possible). Hence, the ability to perform back stretching exercises will be limited, as will the level of exercise intensity.

SUMMARY

An aspect of the present disclosure is to provide an exercise apparatus with high structural stability, and which results in good exercise effectiveness and high exercise intensity, all of which are important considerations when devising exercise apparatuses.

According to an embodiment of the present disclosure, an exercise apparatus includes a seat, a curved track, a linker, a backrest, and a replacing force means. The curved track is connected to the seat. A first end of the linker is slidably mounted on the curved track. An end of the backrest is pivotally connected to the seat, and a second end of the linker opposite the first end is pivotally connected to the backrest. The replacing force means is used for replacing the backrest.

According to one example of this embodiment, the aforementioned replacing force means can be an elastic member which can be interconnected between the seat and the linker, or can be interconnected between the seat and the backrest.

According to another example of this embodiment, the curved track has at least one curved surface, and the first end of the linker may have a saddle. The saddle can be mounted on the curved track and can comprise at least one rolling wheel pivotally disposed therein. The at least one rolling wheel can be rollably abutted against the curved surface.

It is to be understood that both the foregoing general description and the following detailed description are by examples, and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention can be more fully understood by reading the following detailed description of the embodiment, with reference made to the accompanying drawings as follows:

FIG. **1** is a perspective view of an exercise apparatus according to an embodiment of the present disclosure.

FIG. **2** is an enlarged view of a portion of FIG. **1**.

FIG. **3** is an enlarged view of a saddle of FIG. **1**.

FIG. **4** is a schematic view which shows the exercise apparatus of FIG. **1** in a reclining position.

FIG. **5** is a schematic view which shows the exercise apparatus of FIG. **1** in a locking position.

FIG. **6** is a schematic view indicating a reclining angle α of the exercise apparatus of FIG. **1**

DETAILED DESCRIPTION

FIG. **1** is a perspective view of an exercise apparatus according to an embodiment of the present disclosure, FIG. **2** is an enlarged view of a portion of FIG. **1**, and FIG. **3** is an enlarged view of a saddle of FIG. **1**. An exercise apparatus of the present disclosure is provided. The exercise apparatus is mainly used for sit-up exercises. The exercise apparatus comprises a seat **100**, a curved track **200**, a linker **300**, and a backrest **400**. The seat **100** is provided for a user to sit thereon. A stand **110** and a rod **130** are arranged under the seat **100**. Two exercise ropes **120** can be installed at both sides of the stand **110**, respectively.

The curved track **200** is fixed under the seat **100** and is gradually curved and extended downwardly. In some embodiments, the curved track can also be gradually curved and extended upwardly. Additionally, the curved track **200** is connected to the stand **110**. The curved track **200** has a first curved surface **210** facing upwardly, and a second curved surface **220** facing downwardly (see FIG. **3**). A plurality of positioning holes **230** are formed through sides of the curved track **200**, besides, the positioning holes **230** can be located equidistantly or non-equidistantly.

The linker **300** has a first end **320** and an opposite second end **310**. The first end **320** of the linker **300** is pivotally connected to a saddle **330**, and the saddle **330** is slidably mounted on the curved track **200**. A rolling wheel **340** is pivotally disposed in the upper portion of the saddle **330**, and the rolling wheel **340** is rollably abutted against the first curved surface **210** (see FIG. **3**). A pivot **350** is pivotally disposed opposing the rolling wheel **340** in the lower portion of the saddle **330**, and the pivot **350** is abutted against the second curved surface **220** (see FIG. **3**). In addition, in some embodiments, the curved track has a first lateral surface and a second lateral surface opposing the first lateral surface, and the saddle includes a first rolling wheel and a second rolling wheel. The first rolling wheel and the second rolling wheel are pivotally disposed in the saddle and rollably abutted against the first lateral surface and the second lateral surface, respectively, so that the saddle can slide along the curved track. Also, it will be appreciated that the cross section of the curved track can be any geometric shape which the saddle of the linker can be slidably mounted thereon.

A position-limiting hole **360** is formed through the saddle **330** (see FIG. **2**), and the position-limiting hole **360** is selectively aligned with the positioning holes **230**.

The backrest **400** is connected with the seat **100**, and a plurality of soft pads **401** are arranged outwardly along the backrest **400**. The aforementioned second end **310** of the linker **300** is pivotally connected to a backside of the backrest **400**. The seat **100** and the backrest **400** are pivotally interconnected by the linker **300**, and the linker **300** can slide along the curved track **200**.

Taking a plurality of elastic members **500** as an example of replacing force means of the present disclosure, the plurality of elastic members **500** are disposed under the seat **100** and connected between the rod **130** and the pivot **350**. During pivotal displacement of the backrest **400**, a replacing force can be provided by the plurality of elastic members **500** for pulling the linker **300** back to its original position.

FIG. **4** is a schematic view which shows the exercise apparatus of FIG. **1** in a reclining position, and FIG. **5** is a schematic view which shows the exercise apparatus of FIG. **1** in a locking position. When the backrest **400** is displaced to a reclining position and one of the plurality of positioning holes **230** is aligned with the position-limiting hole **360**, a position-limiting member **600** can be inserted through both the position-limiting hole **360** and the positioning hole **230**, thus locking the backrest **400** at a desired reclining position.

When the aforementioned position-limiting member **600** is removed, a sit-up exercise may be performed using the exercise apparatus of the present disclosure. During this process, the linker **300** can reciprocatingly slide along the curved track **200** during the pivotal displacement of the backrest **400**.

FIG. **6** is a schematic view indicating a reclining angle α of the exercise apparatus of FIG. **1**. As shown in FIG. **6**, the curved track **200** of the present disclosure is curved and extended downwardly, and the linker **300** is able to follow the path along the curved track **200** downwardly, so that the backrest **400** can reach a large reclining angle α while pivotally displacing along a trajectory in accordance with the curved track **200**. The reclining angle α of the present disclosure is larger than the reclining angle of a seatback of conventional exercise equipment. The reclining angle α can be even larger than 90 degrees, which is not possible with conventional exercise equipment.

In conclusion, the present disclosure has a number of advantages which are listed below.

First, both ends **310**, **320** of the linker **300** are pivotally connected to the backrest **400** and the saddle **330** respectively (see FIG. **1**), and the saddle **330** is slidably mounted on the curved track **200**, so that the linker **300** can be displaced with the pivotal displacement of the backrest **400**. In addition, the linker **300** is movably interconnected with the curved track **200** by the saddle **330**, so that the trajectory along which the backrest **400** is displaced can be limited by the saddle **330**. Moreover, the curved track **200** and the linker **300** can act as supports for the backrest **400**, thereby stabilizing the structure during operation.

Second, during operation, the displacing velocity of the backrest **400** can be gradually changed in accordance with the curvature of the curved track **200**. Thus, while the backrest **400** is pivotally displaced with the linker **300** sliding along the curved track **200**, the replacing force of the backrest **400**, which is provided by the plurality of elastic members **500**, gradually varies depending on the displacement positions of the backrest **400**. Hence, it is possible to provide variable exercise resistances when a user is using the exercise apparatus of the present disclosure, so that the monotonous and unchanging exercising resistance associated with conventional exercise equipment is avoided. Gradual changes of the replacing force can also improve the effectiveness of exercise.

Third, the curved track **200** of the present disclosure is curved and extended downwardly, thereby allowing the linker **300** to follow along the path of the curved track **200** downwardly, so that the backrest **400** can reach a large reclining angle α while pivotally displacing along a trajectory in accordance with the curved track **200**. The reclining angle α of the present disclosure is much larger than the reclining angle of a seatback of conventional exercise equipment. Therefore, a stretching exercise can be easily performed, and the exercise intensity can be increased.

It will be apparent to those skilled in the art that various modifications and variations can be made without departing from the scope or spirit of the present invention. Therefore, the scope of the present invention shall be defined by the appended claims.

What is claimed is:

1. An exercise apparatus, comprising:

a seat;

a curved track connected to the seat, wherein the curved track is fixed under the seat and is gradually curved and extended toward a vertical direction;

a linker having a first end and a second end, wherein the first end of the linker is slidably mounted on the curved track, and a distance between the seat and the first end of linker is changeable;

a backrest, wherein an end of the backrest is pivotally connected to the seat, and the second end of the linker is pivotally connected to the backrest; and

a replacing force means for providing a returning force to return the backrest to a first position.

2. The exercise apparatus according to claim **1**, wherein the curved track is gradually curved and extended upwardly.

3. The exercise apparatus according to claim **1**, wherein the curved track is gradually curved and extended downwardly.

4. The exercise apparatus according to claim wherein:

the curved track has at least one curved surface; and

the first end of the linker has a saddle mounted on the curved track, the saddle further comprises:

at least one rolling wheel pivotally disposed in the saddle and rollably abutted against the curved surface.

5. The exercise apparatus according to claim **1**, wherein:

the curved track has a curved surface and a plurality of positioning holes formed therethrough;

the first end of the linker has a saddle mounted on the curved track the saddle further comprises:

a rolling wheel pivotally disposed in the saddle and rollably abutted against the curved surface; and

a position-limiting hole formed through the saddle and which can be aligned selectively with any one of the plurality of positioning holes of the curved track;

a position-limiting member removably inserted into the position-limiting hole and one of the positioning holes of the curved track.

6. The exercise apparatus according to claim **5**, wherein the plurality of positioning holes are located equidistantly.

7. The exercise apparatus according to claim **5**, wherein the plurality of positioning holes are located non-equidistantly.

8. The exercise apparatus according to claim **1**, wherein the replacing force means is an elastic member interconnected between the seat and the linker.

9. The exercise apparatus according to claim **1**, wherein the replacing force means is an elastic member interconnected between the seat and the backrest.

10. The exercise apparatus according to claim **1**, wherein:
the curved track has a first curved surface facing upwardly, and a second curved surface facing downwardly;
the first end of the linker has a saddle slidably disposed on the curved track, the saddle further comprises:
a rolling wheel pivotally disposed in the saddle and rollably abutted against the first curved surface; and
a pivot pivotally disposed opposing the rolling wheel in the saddle and abutted against the second curved surface.

11. The exercise apparatus according to claim **1**, wherein:
the curved track has a first lateral surface and a second lateral surface opposing the first lateral surface;
the first end of the linker has a saddle slidably disposed on the curved track, the saddle further comprises:
a first rolling wheel pivotally disposed in the saddle and rollably abutted against the first lateral surface; and
a second rolling wheel pivotally disposed opposing the rolling wheel in the saddle and abutted against the second lateral surface.

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